

IGNAT'YEV, I.P., inzhener; TOPILIN, S.I., inzhener.

Causes of premature wear in electric brushes. Elek. i tepl. tiaga
no.6:18-21 Jo '57. (MLRA 10:8)
(Brushes, Electric) (Electric locomotives)

IGNAT'YEV, I.

Shortwave transmitter and broadcast receiver. Radio no.3:28-30, 34
Mr '61. (MIRA 14:8)

(Radio, Shortwave)

IGNAT'YEV, I.

Microwave radio station and a broadcast receiver. Radio no.4:
35-36 Ap '61. (MIRA 14:7)

(Radio, Shortwave)

IGNAT'YEV, I.

Accidents have been eliminated. 2a bezop.dvizh. 4 no.2:4-5
F '62. (MIRA 15:5)
(Traffic accidents)

BAZILEV, A.; IGNAT'YEV, I.

Simple radio receiver for "fox hunting" competitions. V pos.
radiolub. no.13:3-10 '62. (MIRA 16:4)

(Radio direction finders)
(Radio—Receivers and reception)

L 65222-65

ACCESSION NR: AP5022051

UR/0286/65/000/014/0127/0128

AUTHOR: Fialkov, A. S.; Vil'kin, M. A.; Temkin, I. V.; Ignat'yev, I. F. 17 B

TITLE: Method of obtaining material based on carbon black and pitch for contact brushes of electrical machinery designed for high-altitude operation. Class 21, No. 122801

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 127-128

TOPIC TAGS: contact brush, carbon black pitch

ABSTRACT: The proposed method for the production of high-altitude contact brushes employs vibroground carbon black and high-temperature pitch in amounts of 60—65% to produce thread-like pores in the material without the introduction of vapor-forming substances. [PW]

ASSOCIATION: none

SUBMITTED: 28Jul58

ENCL: 00

SUB CODE: MT, EE

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4089

Card 1/1 *fil*

ACC NR: AP6021526

SOURCE CODE: UR/0089/66/020/006/0489/0494

AUTHOR: Ignat'yev, B. G.; Nezhevenko, L. B.; Kovalev, A. V.;
Poltoratskiy, N. I.; Fomin, G. S.; Yakutovich, M. V.

ORG: none

TITLE: Production of thin plate from refractory carbides

SOURCE: Atomnaya energiya, v. 20, no. 6, 1966, 489-494

TOPIC TAGS: zirconium, zirconium carbide, ~~powder carbide~~, ~~powder metal~~
~~carbide~~ extrusion, ~~powder carbide~~ rolling, ~~extruded thin plate~~,
~~rolled thin plate density~~

ABSTRACT: Two methods of producing dense, thin plate from zirconium-carbide powder have been investigated: 1) hot extrusion with subsequent high-temperature sintering with various surface-active additives; 2) rolling zirconium-carbide powder into plate and subsequent sintering. A mixture of the powders of zirconium-carbide and metallic zirconium (15 wt.%) plasticized with a 3% solution of rubber in 3-chlorethylene was extruded under a specific pressure of 1.5—3.0 t/cm² into plate which was sintered at 2100—2500C for up to 3 hr. Tests showed that the powder fineness, specific extrusion pressure, and temperature and duration of sintering had only a slight effect on the final product

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UDC: 621.762.546.261

L 35860-66

ACC NR: AP6021526

density, which averaged from 5.02 to 5.82 g/cm³. Appreciably better results were obtained in extruding and sintering plate from the same mixtures with the addition of 0.3—1.5 wt.% of NiCO₃ or NiC₂O₄ activating salts. For example, the oxygen content in both sintered and unsintered specimens with activating additives was 3—4 times lower than in specimens without additives (0.05—0.09 and 0.25%, respectively). The highest density plate (about 6.3 g/cm³—94% of the theoretical) was obtained with the addition of 0.3 wt.% NiCO₃ or NiC₂O₄ to a powder with a specific surface of 8 m²/g, which was extruded and subsequently sintered at 2400—2500C. Plate rolled from granulated powder with a particle size of 100—280 μ, prepared from a powder mixture plasticized with a 3% solution of 1.0 wt.% powdered rubber in benzine, was sintered at a temperature of up to 2000C in a vacuum of 10⁻³ mm Hg and at higher temperatures (2100—2500C) in an argon atmosphere at a pressure of 300—350 mm Hg. It was found that the density of the sintered plate increased with increasing powder fineness and sintering temperature. The best results were obtained with powder ground for 96 hr (a specific surface of 8 m²/g). The 1 mm-thick plate rolled from this powder, after sintering at a temperature of 2300C or higher, had a density of 6.5 g/cm³ (97% of the theoretical). Elimination of the need for activating additives and higher density of the final product are definite advantages of the second method of producing thin plate from zirconium-carbide powder. Orig. art. has: 2 figures and 8 tables. [MS]

SUB CODE: 11, 13/ SUBM DATE: 29Jan66/ ORIG REF: 007/
 OTH REF: 003/ ATD PRESS: 5037
 Card 2/2 114

IGNAT'YEV, B. G.; NEZHEVENKO, L. V.; POLTORATSKIY, N. I.; FOMIN, G. S.; YAKUTOVICH,
M. V.

"Fabrication of Large Gabarit Makes from refractory carbides."

Paper submitted but not presented at Intl Powder Metallurgy Conf, New York City,
14-17 June 65.

IONAT'YEV, I.I.

Rail creep adjuster. Rats. predl. na gor. elektrotransp. no.9:
77 '64. (MIRA 18:2)

1. Sluzhba puti Tramvayno-trolleybusnogo upravleniya Leningrada.

IGNAT'YEV, I.I., Inzhener-kapitan 1-gc ranga

Some physical principles determining the work of sonar equipment.
Mor. sbor. 47 no.7:74-77 J1 '64. (MIRA 18:7)

Ignat'yev, I.S.
ANDREYEV, K.P.; BOBOREKO, E.A.; IGNAT'YEV, I.S.; ZELENCHCHIKOV, A.V.;
BELYAYEVSKIY, I.A.; SHIRYAYEV, A.M.; SAPIRO, M.M.

Steam injection cooling of stillage. Gidroliz. 1 lesokhim. prom.
10 no.7:30-32 '57. (MIRA 10:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidroliznoy i
sul'fitnospirovoy promyshlennosti (for Andreyev, Boboreko,
Ignat'yeva, Zelenshchikova). 2. Leningradskiy gidroliznyy zavod
(for Belyayevskiy, Shiryayev, Sapiro).
(Alcohol)

IONAT'YEV, I.Z.

Greater development of transportation in containers. Rech. transp.
16 no.6:10-11 Je '57. (MLRA 10:8)

1. Zamestitel' nachal'nika Gor'kovskogo porta.
(Inland water transportation) (Cargo handling)

IGNAT'YEV, K.

"Theory of Submarines (Teoriya podvodnykh lodok)," Moscow. Voen. yea-vo, 1947.

IGNAT'YEV, K., inzh.; NIKIFOROV, M., inzh.

Electric automatic machines cure concrete. Na stroi. Ros. 3 no.12:9
D '62. (MIRA 16:2)

1. KuzNIIShakhtostroy.
(Precast concrete—Curing) (Automatic control)

IMATIYEV, K. I., OKO-OKOV, V. I., SUCHENKIN, S. I., MEYER, S. I.,
and GALANINA, N. D.

"Time of Flight Measurement of the Total Neutron Cross-Section of
Uranium - 233, Uranium - 235, and Plutonium - 239," a paper presented
at the Atoms for Peace Conference, Geneva, Switzerland, 1955

~~IGNAT'YEV, K. G.~~
~~IGNAT'YEV, K. G.~~

4075 AEC-1r-2438((Pl. 1) (p.81-84))
DEPENDENCE OF THE EFFECTIVE NUMBER OF
SECONDARY NEUTRONS ON THE ENERGY OF CAPTURED
NEUTRONS. PART I. S. Ye. Nishina, S. I. Sukhoruchkin,
K. G. Ignat'ev (Ignat'ev), and N. D. Golanits. PART II.
S. Ye. Nishina, P. A. Krupchitsky (Krupchitskii), and V. F.
Belkin. p.81-84 of CONFERENCE OF THE ACADEMY OF
SCIENCES ON THE USSR ON THE PEACEFUL USES OF
ATOMIC ENERGY, JULY 1-5, 1958. SESSION OF THE
DIVISION OF PHYSICAL AND MATHEMATICAL SCIENCES
(Translation). 14p.

This paper was originally abstracted from the Russian
and appeared in Nuclear Science Abstracts as NSA 8-7891.

900
RML

7

RML

IGNAT'YEV, K. G.

The effective number of secondary electrons as a function of the energy of the captured primary electrons. I. S. Ya. Nikitin, S. I. Bukharchin, K. G. Ignat'yev, and N. D. [unclear]. *Zhurnal Atomnoy Energii, Zasedaniya Otdel. Fiz.-Mat. Nauk* 1953, 87-98 (English summary 100-7).—The results of measurements of the capture of slow neutrons by the transmission method and of the fission by counting the secondary neutrons were used to det. the energy function of secondary electrons ν_{eff} . $\nu_{eff} = \nu \sigma_f / \sigma_c$, where ν = the no. of secondary electrons in the act of fission, σ_f and σ_c are the fission cross section and the capture cross section, resp. A 128-channel neutron time-of-flight selector was used together with a cyclotron. σ_c , σ_f , and ν_{eff} were measured in the energy interval from 0.0084 to 11.33 e.v.; the neutrons were traced by aid of a ZnS screen with an Ag activator.

Both σ_f and σ_c show a no. of resonances. For several levels the fission width Γ_f and the radiation width Γ_γ were detd.; the Γ_γ showed wide variations. The method used to find ν_{eff} does not take into consideration any self-shielding of the sample, thus the value ν_{eff} could be obtained as the av. for several resonance levels. The ratio ν_{eff}/ν_{th} for the thermal region varies for different groups of resonances for U^{235} 0.85-1.08, for U^{238} 0.8-0.9, for Pa^{231} 0.85-1.15. II. S. Ya. Nikitin, P. A. Krupchitskii, and V. F. Belkin, *Ibid.* 99-106 (English summary, 107).—The ratio of the ν_{eff} for neutrons of intermediate energies to that for the thermal energies was measured for U^{235} . The intermediate neutron spectrum contained neutrons from 0.5 to 1000 e.v. This spectrum was obtained by a neutron-energy transformer consisting of a D_2O tank and a B-alab lattice. A U block at the bottom of the tank served as source of neutrons. It was irradiated by thermal neutrons from the vertical expl. channel of the D_2O research reactor. The tank also contained neutron detectors, i.e. fission chambers lined with U^{235} and a proportional counter lined with B. During the measurements the fission chamber was shielded by cylindrical B filters and the counter by U^{235} filters. The thermal neutron spectrum was obtained in the tank after removal of the B-lattice. The ratio $\nu_{eff}^{measured} / \nu_{eff}^{theory}$ was 1.02 ± 0.03 . The excess of the fission cross section of U^{235} was 3.32 ± 0.03 .

SOV/120-59-4-3/50

AUTHORS: Ignat'yev, K. G., Kirpichnikov, I. V., Sukhoruchkin, S. I.

TITLE: A Neutron Spectrometer Using a Polarized Cyclotron Beam

PERIODICAL: Priory i tekhnika eksperimenta, 1959, Nr 4, pp 25-31
(USSR)

ABSTRACT: A description is given of a 256-channel neutron analyzer. A cyclotron with a vertical deflection of the deuteron beam onto an internal target is used as the neutron source. This gives high density neutron pulses about 0.1 μ sec long. The channel width can be 0.25, 1, 2, 4, 8, 16 and 32 μ sec. The time interval required is set by a choice of one of the above channel widths and a delay made up of a combination of one of the following time intervals: 0, 16, 32, 64, 128, 256, 512, 1024, 2048, and 4096 μ sec. The length of the working cycle T depends on the experimental conditions and may be one of the following: 512, 1024, 2048, 4096 or 8192 μ sec. The best resolution obtained was 0.024 μ sec/m. This corresponds to a flight path of 15 m. The corresponding upper limit for the energy at which the measurements are carried out is 100 eV. The total relative error in the determination of the flight time is 0.20%. A brief description is also given of the method whereby the deuteron beam is deflected on to the internal target. Fig 1 shows a schematic drawing of the

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A Neutron Spectrometer Using a Polarized Cyclotron Beam

vertical deflection system. In Fig 1 1 is the deflecting plate, 2 is the cyclotron beam, 3 is the target, 4 is the absorber and 5 is the boron carbide screen. Fig 2 shows the circuit of the generator of the deflecting pulses and Fig 4 shows the form of a pulse of fast neutrons from the target. The upper curve corresponds to the case where the vertical deflection pulse is not applied and the lower curve corresponds to the case in which the vertical is applied. There are 7 figures, 1 table and 7 references, of which 4 are English and 3 are Soviet.

SUBMITTED: May 17, 1958.

Card 2/2

S/903/62/000/000/042/044
B102/B234

AUTHORS: Ignat'yev, K. G., Kirpichnikov, I. V., Kozodayeva, N. M.,
Sukhoruchkin, S. I.

TITLE: Investigation of the γ -rays from neutron resonance capture by
heavy nuclei

SOURCE: Yadernyye reaktsii pri mal'kikh i srednikh energiyakh; trudy
Vtoroy Vsesoyuznoy konferentsii, iyul' 1960 g. Ed. by
A. S. Davydov and others. Moscow, Izd-vo AN SSSR, 1962, 551

TEXT: A brief communication is given on investigations of the γ -ray spectra
and angular correlations in the case of neutron resonance capture by W, Pt,
Xe, and Ag. The neutron energy was measured by the time-of-flight method
with a multi-channel selector. The γ -rays were analyzed with the help of
scintillation spectrometers and a pair spectrometer. The spins of several
resonance levels were determined by comparing the ground-state transition
intensities and measuring the angular correlation of the cascade γ -rays:
I = 1 for W¹⁸³ with E_0 = 7.6 and 26 ev, for Pt¹⁹⁵ with E_0 = 11.9, 19.6 and
68 ev, and for Xe¹²⁹ with E_0 = 9.5 ev; I = 0 for E_0 = 102 ev of W¹⁸³. The
intensities of the transitions from different levels to the ground state
differ greatly.

RATYNSKIY, V.; ~~IGNAT'YEV, K.G.~~; KIRPICHNIKOV, I.V.; BELYAYEV, F.N.;
SUKHORUCHKIN, S.I.

Gamma-ray spectra produced in resonance neutron capture. Zhur.
eksp. i teor. fiz. 45 no.4:870-874 0 '63. (MIRA 16:11)

1. Institut teoreticheskoy i eksperimental'noy fiziki.

IGNAT'YEV, K.G.; KIRPICHNIKOV, I.V.; SUKHORUCHKIN, S.I.

Spin dependence of the density of resonance levels. Zhur. eksp.
i teor. fiz. 45 no.4:875-881 0 '63. (MIRA 16:11)

1. Institut teoreticheskoy i eksperimental'noy fiziki.

IGNAT'YEV, K.G.; KIRPICHNIKOV, I.V.; SOLDATOV, A.N.; SUKHORUCHKIN, S.I.;
KHARITONOV, A.D.

Improvement of the neutron-velocity selector and measurement
of the first resonances in copper and zinc. Prib. i tekhn. eksp.
10 no.5:58-60 S-O '65.

(MIRA 19:1)

1. Institut eksperimental'noy i teoreticheskoy fiziki Gosu-
darstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR,
Moskva. Submitted Sept.20, 1964.

(BR)

ACCESSION NR: AP4015557

S/0089/64/016/002/0110/0119

AUTHOR: Ignat'yev, K. G.; Kirpichnikov, I. V.; Sukhoruchkin, S. I.

TITLE: Measurement of Eta and of partial cross sections of U sup 235 and Pu sup 239 isotopes for neutrons of resonant energies

SOURCE: Atomnaya energiya, v. 16, no. 2, 1964, 110-119

TOPIC TAGS: total cross section, partial cross section, U sup 235, Pu sup 239, radiation capture cross section, fission cross section, nuclear resonance

ABSTRACT: The authors investigated the energy dependence of partial cross sections (for fission and radiation capture) in a wide energy range, 0.03 to 20 ev for U²³⁵ and 5 to 100 ev for Pu²³⁹, with a "blinking" cyclotron beam. The method of measurement is described and the results are given in tables and diagrams. Numerous resonances had been found. A detailed analysis of the results is given in other papers (see Atomnaya energiya, 1964, v. 16). The essential conclusions of the work are as follows: (a) there is a correlation of the

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ACCESSION NR: AP4015557

amplitude signs with the reduced resonance widths; (b) the fission width depends strongly on the spin. "The authors are grateful to V. V. Pavlov, V. V. Rotman, A. N. Soldatov, and A. D. Kharitonov for help with measurements, and to the members of the mathematical section of the Institute for Theoretical and Experimental Physics, S. P. Borovlev and L. I. Panov." Orig. art. has: 11 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 22Apr63

DATE ACQ: 12Mar64

ENCL: 00

SUB CODE: PH

NO REF SOV: 005

OTHER: 012

Cord 2/2

ACCESSION NR: AP4020326

S/0089/64/016/003/0211/0218

AUTHOR: Kirpichnikov, I. V.; Ignat'yev, K. G.; Sukhoruchkin, S. I.

TITLE: Interference effects in fission cross sections

SOURCE: Atomnaya energiya, v. 16, no. 3, 1964, 211-218

TOPIC TAGS: interference effect, fission cross section, U sup 235, Pu sup 239, spin resonance, plutonium, uranium

ABSTRACT: An interference analysis for a fission cross section of isotopes U^{235} and Pu^{239} with slow neutrons was conducted. Relative signs of amplitude of reduced widths and degree of interference for highly interfering levels are obtained. A correlation of amplitude signs is discovered. The number of effective open fission channels is found near unity for Pu^{239} and near two for U^{235} . Conclusions are made on the spins of a series of plutonium levels and relative spin resonances of U^{235} . The values of average fission level widths with different spins are obtained. "In conclusion, the authors are sincerely grateful to S. P. Borovlev and L. I. Patova for help in preparing measurement results." Orig. art has: 2 tables, 3 figures, 4 formulas.

Card 1/1

AUTHOR: Ignat'yev, K.N. SOV/138-58-7-5/19
TITLE: The Use of High (Drying) Temperature in Tyre Production
(O primeneniі vysokikh temperatur v shinnom proizvodstve)
PERIODICAL: Kauchuk i rezina, 1958, nr 7, pp 18 - 20 (USSR)
ABSTRACT: One of the main difficulties in establishing high rate of production in tyre factories lies in the drying of the tyre cord material. A heated drum-type drier is used at the Moscow factory as in Figure 1, and roller driers at all other factories. The drum drier works at an average speed of 27 m/min and reduces the moisture content of the cord from 55% to 1.02%, evaporating 430 kg of moisture per hour with expenditure of 1 705 kg.calories/hour. Air is heated by steam calorifiers to 160 - 165 °C and makes a double pass through each drum under forced draught. This drying rate limits the entire production and the author considers it to be more logical to introduce higher drying temperatures - to 400 °C - 500 °C using hot flue gas - than to increase the size of conventional driers. A gas-heated drier, known as the Gorodov and Cherkinskiy machine, is in operation at the nr 1 Sittsenablnaya factory in Moscow and at the im. V. Slutskaya factory in Leningrad. The machine is shown in figure 2. The roller width is

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The Use of High (Drying) Temperature in Tyre Production SOV/138-58-7-5/19

1,100 mm. It is heated by the combustion products of gas and air. Mixed flue gas and air enter the drier at 550 °C. There is considerable temperature drop in the first zone so the second zone receives further hot gas which is tapped off the gas and air mixing tunnel at point 4 in the illustration. Further along the line, in the zone 6, hollow plates are disposed between the loops of the web, and the gas-air mixture issues from nozzles in these plates across the full width of the web. Finally, there is a cooling zone, beyond the division 7, from which the gas-air mixture leaves the plant at 80 - 100 °C. The web leaves the drier at about 60 °C, with 5 - 6% moisture. The speed of the web can be varied between 40 and 120 m/min. Evaporation is at the rate of 450 to 600 kg/h with an initial drying temperature of 430 - 460 °C. This rate can be increased to 700 kg/h with web widths of 700-800 mm. The article concludes with a description of the pneumatic control for the burner, illustrated in figure 3. This provides for automatic temperature control, correct ratio of gas and air at all heating rates, spark ignition of

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The Use of High (Drying) Temperature in Tyre Production SOV/138-58-7-5/19

the burners and automatic cut-off in the event of the web breaking, ignition failure, or interruption of the air supply.

Experience with the drier confirms the possibilities of high-production rate with a compact plant and shows economy of fuel. Its use at the Nr 1 "Sittsenabivnaya" (cotton textile) factory shows an economy of not less than 13 500 metric tons of conventional fuel per year.

The growth of the gas industry throughout the country and the possibilities of direct use of natural hydro-carbon gas should enable wide adoption of this type of drier, not only in the tyre industry but for textile factories, generally. There are 3 figures. (The pneumatic control system described was evolved at the "Mosgazproyekt" Institute).

Card3/3 1. Tires--Production 2. Tires--Dehydration 3. Dehydrators
--Performance

IGNAT'YEV, K.S., Inzh.; NIKIFOROV, M.I.

Method of automatic control of steam curing chambers based
on the concrete hardening rate. Trudy KuzNIIshakhtostroia
no.1:85-100 '63, (MIRA 17:8)

YONASHEV, K.S., inzh.

Using fly ash from hydroelectric power stations in the production of building materials and prospects for using ash in the Kuznetsk Basin. Trudy KuzNIIshtakhtostroia no.1:101-110 '63.

(MIRA 17:8)

IGNAT'YEV, L.I.

BAKATIN, V.P.; BUBOK, K.G.; BUGAREV, L.A.; BUNIN, A.I.; VOROB'YEV, K.V.
DROZDOV, V.V.; DOROKHOV, M.S.; ZUBRILOV, S.V.; ~~IGNAT'YEV, L.A.~~
KARGOPOLOV, I.G.; KLUSHIN, D.N.; KOMAROV, A.M.; KURILOV, M.S.;
LOMAKO, P.F.; MIKULENKO, A.S.; MIKHAYLOV, M.M.; NEMTINOV, B.A.;
OL'KHOV, N.P.; OSIPOVA, T.V.; PAKHOMOV, Ya.D.; PLAKSIN, I.N.;
PODGHAYNOV, S.F.; PUSTYL'NIK, I.I.; ROZHKOV, I.S.; SAVARI, Ye.A.;
SEMYNIN, A.P.; SPIVAKOV, Ya.N.; STRIGIN, I.A.; SUSHENTSOV, S.N.;
SYCHEV, P.S.; TROITSKIY, A.V.; USHAKOV, K.I.; KHARLAMOV, A.Ye.;
SHENMYAKIN, N.I.

Nikolai Konstantinovich Chaplygin. TSvet. net. 28 no.2:57-58
Mr-Ap '55. (MIRA 10:10)
(Chaplygin, Nikolai Konstantinovich, 1911-1955)

DOBKUKIN, A.V., prof., doktor tekhn. nauk; IGUMENOV, L.D., kand.
tekhn. nauk; SHAVERINA, R.F., red.

[Results of scientific research insuring the technical
progress of the coal industry in the current seven year
plan; report at the meeting of the Technical and Economic
Council of the Lugansk Economic Council] Rezul'taty na-
uchnykh issledovaniy, obespechivayushchie tekhnicheskii
progress v ugol'noi promyshlennosti v tekushchem semiletii;
doklad na zasedanii tekhniko-ekonomicheskogo soveta lugan-
skogo sovnarkhoza. Moskva, In-t gornogo dela im. A.A.
Skochinskogo, 1962. 42 p. (MIRA 1:7)

IGNAT'YEV, M. (g.Lyubertsy, Moskovskoy oblasti)

Mechanization of production. Prom.koop. 13 no.8:23
Ag '59. (MIRA 12:12)
(Liubertsy--Textile waste)

IGNAT'YEV, Mikhail Aleksandrovich; LAVRENT'YEV, V.M., otv.red.;
DROZHZHINA, L.P., tekhn.red.

[Diagrams for propeller design for ice-breaking vessels]
Diagrammy dlia rascheta grebnykh vintov ledokolov i ledokol'nykh sudov. Leningrad, Izd-vo "Morskoi transport," 1959.
23 p. (MIRA 13:9)
(Propellers)

IGNAT'YEV, M.A., kand.tekhn.nauk

Determining propeller shaft strength specifications for ice-breaking
vessels. Sudostroenie 25 no.1:34-37 Ja '59. (MIRA 12:3)
(Propellers) (Shafting) (Ice-breaking vessels)

Ignat'ev M. A.
USSR/Physical Chemistry. Electrochemistry.

B-12

Abz Jour : Ref Zhur - Khimiya, No 7, 1957, 22504.

Author : S. A. Balezin, M. A. Ignat'ev.

Inst : Not given

Title : Influence of some Elementorganic Compounds on the Rate of Carbon Steel Solution in Inorganic Acids.

Orig Pub : Dokl. AN USSR, 1956, 109, No 4, 771-773.

Abstract : The influence of tetraphenyl elements bromides (TPE) $(C_6H_5)_4PBr$; $(C_6H_5)_4AsBr$; $(C_6H_5)_4SbBr$; of phosphorus containing organic compounds $(C_6H_5)_4PCl$; $(C_6H_5)_4PI$; $(C_6H_5)_3CH_2PI$; of trichloride of diphenyl elements $(C_6H_5)_2AsCl_3$; $(C_6H_5)_2SbCl_3$ and of triphenyl elements $(C_6H_5)_3N$; $(C_6H_5)_3As$; $(C_6H_5)_3Sb$; $(C_6H_5)_3P$; $(C_6H_5)_3Bi$, on the solution rate (SR) of steel-20 in H_2SO_4 (I-10n) and in HCl (I-5n) at 20° was studied by gravimetric methods. The surveyed substances in concentration $5 \cdot 10^{-4}$ M are sharply hindering steel solution; their action varies little with further concentration increase. Bromides and iodides of TPE (especially $(C_6H_5)_4PI$) have the greatest inhibitive effect. It is shown, with the aid of polarization curves, that these TPE have an effect on anodic and cathodic processes. Steels SR in H_2SO_4

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USSR/Physical Chemistry. Electrochemistry.

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Abu Jour : Ref Zhur - Khimiya, No 7, 1957, 22504.

diminishes, in the presence of haloid TPE, with an increase in acids concentration till 6 n and does not vary at greater concentrations, whereas SR in HCl increases with greater acid concentration. By method of marked atoms on sample surfaces etched in acid containing $(C_6H_5)_4PI$, I was discovered, and its quantity was 5-6 times more in case of H_2SO_4 than in case of HCl. The amount of I increased with the increase in H_2SO_4 concentration but did not vary with the increase in concentration of HCl.

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IGNAT'YEV, M.A., veterinarnyy vrach; PUSHINA, L.K., veterinarnyy vrach;
DOZYANIN, D.Kh., veterinarnyy vrach.

Using an acidophil bouillon culture on Rostov Province state farms.
Veterinariia 34 no.4:64-65 S '57. (MLRA 17:9)

1. Rostovskaya mezhsovkhoznyaya vetbaklaboratoriya.
(Bacteriology--Cultures and culture media)
(Rostov Province--Veterinary medicine)

IGNAT'YEV, M.A.

Determination of ice loads absorbed by the blades of a propeller.
Probl.Arkt.i Antarkt. no.15:41-51 '64. (MIRA 17:4)

IGNAT'YEV, M. A.:

IGNAT'YEV, M. A.: "Some applications of the method of reflections to the system of equations of the theory of elasticity." Min Higher Education Ukrainian SSR. L'viv State U named Ivan Franko. L'viv, 1956. (Dissertation for the Degree of candidate in Physicomathematical Science.)

So: Knizhnaya letopis' no. 36 1956 Moscow.

SOV/124-59-1-692

Translation from: Referativnyy zhurnal. Mekhanika, 1959, Nr 1, p 100 (USSR)

AUTHOR: Ignat'yev, M.O.

TITLE: On the Presentation of the Solutions of Two Fundamental Boundary Value Problems in Theory of Elasticity for a Sphere in Integral Form

PERIODICAL: Nauk. zap. L'vivs'k. un-t, 1957, Vol 44, pp 48-59 (Ukr.)

ABSTRACT: On the basis of the known properties of spherical functions series are summarized by means of which the solutions of the fundamental problems of the elasticity theory for the sphere can be represented (Lur'ye, A.I., Spatial Problems of the Elasticity Theory, Moscow, Gostekhizdat, 1955). The integral presentation of the solution of the problem is given both for the inner side of the sphere, in the case of given displacements on its surface, and also for the outer side of the sphere. The series, by means of which the solutions of the above considered problems are represented under discontinuous boundary conditions, are converging slowly, whereas the integral presentation of the solutions of these problems are free of this deficiency, as it is shown in the treatise.

Card 1/1

G.N. Savin ✓

IGNAT'YEV, M.O. [Ihnat'iev, M.O]

Applying the mapping method to simultaneous equations of the
elasticity theory. Nauk zap. L'viv. un. 44 no.8:60-70 '57.

(MIRA 11:6)

(Equations, Simultaneous) (Transformations (Mathematics))
(Elasticity)

S/044/62/000/006/007/127
B112/B104

AUTHOR: Ignat'yev, M. A.

TITLE: Solution of Neumann's problem by the symmetry method of D. A. Grave

PERIODICAL: Referativnyy zhurnal. Matematika, no. 6, 1962, 42, abstract 6B180 (Dokl. L'vovsk. politekhn. in-ta, v. 4, no. 1-2, 1960, 30 - 36)

TEXT: The author obtains a general formula for solving Neumann's problem by using the method of D. A. Grave for solving the Dirichlet problem for domains bounded by algebraic curves (D. A. Grave, Fundamental Problems of the Mathematical Theory of Compiling Geographic Maps). Examples considered are Neumann's problems for the semicircle, the semi-plane, the ellipse, Bernoulli's lemniscate, the rectangle, and for other domains.

[Abstracter's note: The paper does not give certain definitions, necessary for the applicability of the method.] [Abstracter's note: Complete translation.]

Card 1/1

ZAGORSKIY, Teodor Yakovlevich; IGNAT'YEV, M.A., dotsent, otv.red.;
KVITKO, I.S., red.; MALYAVKO, A.V., tekhn.red.

[Mixed problems for systems of differential equations with
partial derivatives of the parabolic type] Smeshannyye zadachi
dlya sistem differentsial'nykh uravnenii s chastnymi proizvodnymi
parabolicheskogo tipa. L'vov, Izd-vo L'vovskogo univ., 1961.
112 p. (MIRA 15:4)

(Differential equations, Partial)

IGNAT'YEV, M.A.

Calculation of the strength of ship propeller blades for navigation
in icy conditions. Probl. Arkt. i Antarkt. no.16:75-82 '64.

(MIRA 17:6)

IGNAT'YEV, M.A., kand.tekhn.nauk

Calculating the strength of propeller blades on icebreakers and
ice ships. Sudostroenie 30 no.1:5-7 Ja '64. (MIRA 17:3)

ACC NR: AM6021852

Monograph

UR/

Ignat'yev, Mikhail Aleksandrovich

Propellers of ice-breaking vessels; design features (Grebnyye vinty sudov ledovogo plavaniya; osobennosti proyektirovaniya) Leningrad, Izd-vo "Sudostroyeniye," 1966. 113 p. illus., biblio., diags. (in pocket) 1500 copies printed.

TOPIC TAGS: ^{ship}icebreaker, ^{marine engineering}propeller, ~~blade, icebreaker propeller, blade~~

PURPOSE AND COVERAGE: This book, intended for engineers and technicians in the shipbuilding industry, is based on materials obtained from laboratory and full-scale studies of the operation of propellers under Arctic ice conditions, taking the operational experience of the icebreaker fleet on the northern sea route into consideration. Stating that a more reliable and widely used method of calculating icebreaker propellers is on the basis of a series of model tests, the book presents calculation curves for designing icebreaker and cargo-vessel propellers for operation under conditions of ice. The author expresses his gratitude to Doctor of Technical Sciences I. Ya. Miniovich, Engineers V. V. Aleshin and G. A. Zvezdkina, Docent O. V. Dubrovin, and Yu. A. Shimanskiy and V. M. Lavrent'yev for their assistance in the study. There are 19 references, all of which are Soviet.

Card 1/2

UDC: 629.124.791.037.17.001.12

ACC NR: AM6021852

TABLE OF CONTENTS [abridged]:

Introduction -- 3

Ch. I. Design characteristics of icebreaker propellers and calculation curves -- 5

Ch. II. Propeller-strength calculation of vessels used for navigation under icy conditions -- 30

Ch. III. Propeller shaft-strength calculation of vessels used for navigation under icy conditions -- 53

Ch. IV. Study of the operation of a forward-mounted icebreaker propeller -- 61

Ch. V. Measures for increasing icebreakers' maneuverability and ability to navigate under icy conditions -- 83

Ch. VI. Practical icebreaker-propeller calculations -- 105

SUB CODE: 13/ SUBM DATE: 02Mar66/ ORIG REF: 019/

Card 2/2

IGNAT'YEV. 1713

PHASE I BOOK EXPLOITATION

SOV/5094

Voronov, Avenir Arkad'yevich, A. R. Garbuzov, B. L. Yermilov, M. B.
Ignat'yev, G. G. Kornitenko, G. N. Sokolov and Yang Hsi-Tseing

Tsifrovyye analogi dlya sistem avtomaticheskogo upravleniya; tsifrovyye
raznostnyye analizatory (Digital Analogs for Automatic Control Systems;
Digital Differential Analyzers) Moscow, Izd-vo AN SSSR, 1960. 195 p.
Errata slip inserted. 7,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut elektromekhaniki.

Ed.: A. A. Voronov, Doctor of Technical Sciences; Ed. of Publishing House:
I. V. Barkovskiy; Tech. Ed.: V. T. Bochever.

PURPOSE: This book is intended to acquaint scientific and technical person-
nel with the latest developments in the field of computers.

COVERAGE: Digital differential analyzers are a relatively new development
in the field of computers and are not yet well elaborated theoretically.
Some of the newest developments in combining universal digital machines

Card 1/8 .

Digital Analogs for Automatic (Cont.)

SOV/5094

with nonlinear interpolators, such as the Ferranti interpolator, are as yet unknown to Soviet readers. While the Soviet literature contains several works describing the principles of construction and operation of differential analyzers intended for operation as computers, the main emphasis in this book is on general methods of synthesizing these machines which are intended to work as systems of automatic control, and also on problems of accuracy in operation. At present digital analogs are used mostly for programmed control of metalworking machines, where several operations, such as preparing data for control, feeding them into the computer, the computing process, and the process of control, are involved. The book investigates only the computing units of the control system. The authors state that the error of integration can be reduced by increasing the number of columns of multidigit numbers in the addend registers or by transition to more accurate, though more complicated, algorithms of approximate integration. However, they find that this complicates the system, and suggest a method which permits simplifying the system while maintaining its accuracy; that is, proceeding from difference, instead of differential, equations. A digital analog based on such principles should be called a digital "difference" analyzer instead of "differential" analyzer. The book discusses problems

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Digital Analogs for Automatic (Cont.)

SOV/5094

of synthesis and analysis of both difference and differential equations. Ways to reduce errors and simplify the arrangement of such computers are indicated. The book attempts to present certain theoretical developments in this field and as a first attempt does not claim to give a full solution of the problem. It also includes some general information on systems of computation and on their basic units and presents examples of difference analyzers developed at the Institute of Electromechanics, AS USSR. The introduction, pars. 1-6 and 8 of Ch. III, Ch. IV, pars. 1 and 4 of Ch. V, and pars. 3 and 4 of Ch. VIII were written by A. A. Voronov; pars. 1 and 2 of Ch. VIII by A. R. Garbuzov; Ch. I by B. L. Yermilov; par. 7 of Ch. III and Appendix I by M. B. Ignat'yev; Ch. II by G. G. Kornitenko; and Ch. VI by G. N. Sokolov, all coworkers of the Institute of Electromechanics, AN USSR. Pars. 2 and 3 of Ch. V were written by Yang Hsi-Tseng, coworker of the Academy of Sciences, Chinese People's Republic, and Chapter VII was written jointly by A. A. Voronov and B. L. Yermilov. No personalities are mentioned. There are 76 references: 39 Soviet (including 1 in French and 1 translation) and 37 English.

Card-3/8

ABOLISHING THE BOMB. That's what the book is about.

[illegible]

Иср.-д-л: В. В. Сидельников, ин. и публик. связи: Л. Т. Боровой, тех. д-л: Э. А. Захарович.

PURPOSE: This collection of works is intended for specialists in inter-mathematics.

CONTENTS: The collection contains all works divided into three sections: 1) Electric machines, 2) Electric Drive and Electric Traction, 3) Automated Electric Drive, and Automatic Regulation and Instruments. No personalities are mentioned. References accompany most of the articles.

**APPROVED FOR RELEASE DATE: APPROXIMATE ESTIMATION
AND DETERMINATION**

Abstract. The A-1000 Problem of Automating the Electric Drive of Telescopes

REPORT, I. C. SHROTHAUS WITH A COMMENT OF SPHERICAL COORDINATES
WITH APPLICATION TO ASTRONOMY PROBLEMS

Elizaveta P. V. Pionovskaya System of Automatic Guidance of Missiles
289

Kornblow, B. In Digital Analogs 202

Milgrom, V. I. and A. V. Melchenko. Product of Data from Solar
Flares with a Local Maximum

Shvachkin, Iosad, V. V. Smorodov, and M. M. Pridina. Publication of the Scientific Information for foresting the Principles of Regulating the

235

of a Waterproof, Electrodynamic Governor Equipped With Magnetic Amplifiers

Levy, R. A. A Method of Optimum Programming of Second-Order Systems 345

Magnetic Moments of Electric Machines

Kuznetsov, L. I., and B. Z. Isen'kov. Measuring Mass Salt Being

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Vinogradov, L. G., I. P. Potapov, and L. N. Nikol'skaya. Baryonic	

S/194/61/000/006/014/077
D201/D302

AUTHOR: Ignat'yev, M.V.

TITLE: A method of optimum programming of second order curves

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1961, 41, abstract 6 B299 (Sb. rabot po vopr. elektromekhan. In-t elektromekhan. AN SSSR, 1960, no. 4, 248-254)

TEXT: Methods are considered which provide for maximum productivity of production benches with digital programmed control. The arrangement is in the form of a digital differential analyzer. The mathematical basis is given and bloc-diagrams of arrangements for constant speed of feed and its acceleration are described, together with that of a circuit which takes into account both the speed and the acceleration. The circuits are based on those of digital analogues. In these circuits the quantity controlled is the frequency ✓

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A method of optimum programming...

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D201/D302

of command pulses applied to the programmer. These pulses, during braking and acceleration, are applied at different rates from data calculated earlier and are stored in the intermediate delay circuit. The control circuit attached to the bench, is operated by error signals at the follow-up system of the bench. The frequency of pulses may be controlled by the absolute value of errors stored in reversible counters. In this case the speed of operation of the system will be lower, compared with the control by the sum of error squares. 2 figures. 2 references. [Abstracter's note: Complete translation]

✓
✓

Card 2/2

IGNAT'YEV, M. B., and VORONOV, A. A.

"Differential Analysers for the Reproduction of Trajectories of
Multi-dimensional Surfaces and Their Use as Control Devices."

report to be submitted for the Third Intl. Conference ~~of~~ of Analogue Computation.,
Belgrade, Yugoslavia, 4-9 Sep 1961.

IGNAT'YEV, M. B. Inst. of Electromechanics, Acad. Sci. USSR

VORONOV, A. A., Asst. Director, Inst. of Electromechanics, Acad. Sci. USSR

S/573/61/000/005/001/023
D201/D305

16.8000 (1103,1031,1132)

AUTHOR: Ignat'yev, M.B.

TITLE: Synthesis of differential analyzers for reproducing implicit functions

SOURCE: Akademiya nauk SSSR. Institut elektromekhaniki. Sbornik rabot po voprosam elektromekhaniki. no. 5, Moscow, 1961. Avtomatizatsiya, telemekhanizatsiya i priborostroyeniye, 13 - 19

TEXT: The author considers the synthesis of a differential analyzer for evaluating an implicit function of n variables

$$F(x_1, x_2, \dots, x_n) = 0 \quad (1)$$

which is differentiable within a given region M of changes of variables and is not a hypertranscendental function. The solution is sought in the form of the first order differential equations

$$\frac{dx_i}{d\varphi} = f, \quad i = 1, 2, \dots, n \quad (2)$$

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S/573/61/000/005/001/023
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Synthesis of differential ...

satisfying (1) in the given region M. In Eq. (2) φ is the argument of integrators of the sought analyzer and functions f_i have to be determined. Differentiating Eq. (1) with respect to φ ,

$$\sum_{i=1}^n \frac{\partial F}{\partial x_i} \cdot \frac{dx_i}{d\varphi} = 0 \quad (3) \quad \text{f}$$

is obtained. In order that the solution of system (2) reduces to an identity (1) for given initial conditions, it is necessary and sufficient that Eq. (2) reduce to an identity Eq. (3). This property is utilized for finding f_i . The problem has many solutions and this fact predetermines the indeterminacy of the problem of synthesis. f_i are sought as linear functions of the above partial derivatives assuming that this is the simplest case. To find f_i the method of undetermined coefficients will be used and the problem is considered further for $n = 3$. Assuming a system of

$$\frac{dx_i}{d\varphi} = \lambda_1 \psi_1 + \lambda_2 \psi_2 + \dots + \lambda_j \psi_j, \quad | \quad (4)$$

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Synthesis of differential ...

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$$\left. \begin{aligned} \frac{dx_1}{d\tau} &= \lambda_1 \psi_{j,1} + \lambda_2 \psi_{j,2} + \dots + \lambda_j \psi_{j,j} \\ \frac{dx_2}{d\tau} &= \lambda_1 \psi_{2,j,1} + \lambda_2 \psi_{2,j,2} + \dots + \lambda_j \psi_{2,j,j} \end{aligned} \right\} \quad (4)$$

in which λ_j - undetermined coefficients, $j = 1, 2, \dots, l_1$; and ψ_k - arbitrary functions, $k = 1, 2, \dots, l_2$ and taking $l_1 = 2$ and $l_2 = 6$, (Eq. (4) reduces to

$$\left. \begin{aligned} \frac{dx_1}{d\tau} &= u_1 \frac{\partial F}{\partial x_2} - u_2 \frac{\partial F}{\partial x_3} \\ \frac{dx_2}{d\tau} &= -u_1 \frac{\partial F}{\partial x_1} + u_3 \frac{\partial F}{\partial x_3} \\ \frac{dx_3}{d\tau} &= u_2 \frac{\partial F}{\partial x_1} - u_3 \frac{\partial F}{\partial x_2} \end{aligned} \right\} \quad (5)$$

where

$$u_1 = \psi_2 \psi_3 - \psi_1 \psi_4$$

$$u_2 = \psi_1 \psi_5 - \psi_2 \psi_6$$

$$u_3 = \psi_1 \psi_6 - \psi_3 \psi_5$$

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Synthesis of differential ...

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The diagram of the differential analyzer may be designed directly from Eq. (5). The analyzer would reproduce curves at the surface $F(x_1, x_2, x_3) = 0$, u_g determining the given curves on it. The same method may be applied for reproducing functions of a great number of variables. For any even $\ell_1 (\ell_2 = n\ell_1)$ the number of arbitrary coefficients u_g will be $s = C_n^2$ equal to the number of independent directional cosines of tangential to the reproduced curve surfaces. It follows from the above analysis that the required differential analyzers will consists 1) of integrators, whose outputs are the variables of the function being reproduced - these integrators are subsequently being referred to as output integrators. Their number is equal to the number of variables of reproduced function; 2) of function generators consisting of summing and integrating amplifiers of x_1 and designed in the usual manner. The coefficients u_g , determining the trajectories are also applied to function generators. The synthesis of the structure of differential analyzers permits reproduction of various space curves which are determined as

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Synthesis of differential ...

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intersection lines of surfaces. Similarly the structure of differential analyzers may be determined to reproduce trajectories as determined by multiple intersections of multi-dimensional figures. It may be easily shown that the number of arbitrary coefficients D_n in equations determine these trajectories will be ascertained as in the Table which is actually part of the Poisson triangle. There is 1 figure and 1 table.

Table.


число перемен- ных n	$F(x_1, \dots, x_n) = 0$	D_1	D_2	D_3	D_4	$D_5 \dots$
	C_n	C_n	C_n	C_n	C_n	$C_n \dots$
1	1	—	—	—	—	—
2	3	1	—	—	—	—
3	6	4	1	—	—	—
4	10	10	5	1	—	—
5	15	20	15	6	1	—
6	21	35	35	21	7	1
7

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31j13
S/573/61/000/005/002/023
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16.4000 (1103, 1031, 1132)

AUTHOR: Ignat'yev, M. 

TITLE: Certain problems in the synthesis of programmed feedback control

SOURCE: Akademiya nauk SSSR. Institut elektromekhaniki. Sbornik rabot po voprosam elektromekhaniki. no. 5, Moscow, 1961. Avtomatizatsiya, telemekhanizatsiya i priborostroyeniye, 19 - 28

TEXT: Programmed systems are considered consisting of summing and integrating elements, i.e. systems in which programming is achieved by means of differential analyzers. When analyzing the structural diagram of such a system for reproducing various two- and three-dimensional curves, given by stationary differential equations, the reproduced curves are invariants of the argument φ of integrators. This property may be used to obtain the dynamic characteristics of control signals x_1 . If the motor stage is actually the follow up system, then the quantity ω_2 the integrand of integrators,

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may be controlled depending on errors (Δx_i) of the follow-up systems. It would then form a system with argument correction in which

$$\omega = f(\Delta x_i), \quad i = 1, 2, \dots, n. \quad (1)$$

If the programmed control system is required to reproduce x_i with a given accuracy, the condition may be mathematically expressed either as

$$\left| \gamma^2 - \sum_{i=1}^n (\Delta x_i)^2 \right| = \Delta \rightarrow 0, \quad (2)$$

where γ - the predetermined value of the modulus of the vector-error of multi-dimensional reproducing system, or as Eq.

$$\left| \gamma - \sum_{i=1}^n \Delta x_i \right| = \Delta \rightarrow 0. \quad (3)$$

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Certain problems in the ...

1941; Fairey 3-dimensional contour milling machine with Ferranti
magnetic tape control system. Machinery, v. 92, no. 2371, London,
1958.

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Certain problems in the ...

With conditions (2) or (3) satisfied, the curve evolved will be contained within the cylinder of the dynamic accuracy. Since the errors of follow-up systems depend on rate of change of the inputs, ω should be expressed as a function of Δ . In simpler cases the system with the correction of the argument provides reproduction of a class of functions which are determined to a given accuracy and with a maximum speed by the structure of programming. In more complex cases such a system provides also the greatest possible dynamic indices of reproduction. The system with argument correction reduces also the possibility of error accumulation. For stable systems of automatic control the greatest errors are proportional to the moduli of the most dangerous inputs. In argument correction systems the level of these inputs is greatly increased and the cumulative effect of errors is thus greatly reduced. Theoretical and analogue analyses have confirmed the suppositions expressed above as to the performance of a system with argument correction, together with good sustainance of error magnitude, operation within the prescribed limits both without and in the presence of interference. Systems with integral control of argument according to Δ and with

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Certain problems in the ...

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other control laws have been studied. It is worthwhile mentioning that the synthesized structures of differential analyzers reflect the properties of surfaces, at which the reproduced curves are located and that they may include un-determined coefficients, whose introduction determines the trajectory at the surface. These undetermined coefficients u_s may be considered as means of setting up of the system so as to reproduce any wanted curve at this surface. These coefficients of the analyzer may also be considered as functions of the performance quality of the controlled object. If this is the case - a system is obtained which is selfadjusting to any given mode of operation, characterized by the trajectory at the surface determining the shape of the controlled object. The system consists in this case of the programmed programming-controlled object. The u_s factors are fed to the programming as outputs from the self-adjustment element, controlled by the error-sensing device in the feed back path. There are 3 figures, and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: C.E. Shannon, Mathematical theory of the differential analyzer. J. Math. a. Phys., v. 20, no. 4,

Card 4/5

IGNAT'YEV, M.B. (Leningrad)

Problem concerning the synthesis of differential analyzers. Izv.
AN SSSR.Otd tekhnauk.Engerg.1 avtom. no.2:128-133 M-Ap '61.

(MIRA 14:4)

(Electronic differential analyzers)

9.7200

40307
S/194/62/000/006/047/232
D295/D308

AUTHOR: Ignat'yev, M.B.

TITLE: Certain problems of the synthesis of program-control systems with feedback

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1962, abstract 6-2-117 a (Sb. rabot po vopr. elektromekhan., Inst. elektromekhan. AN SSSR, no. 5, 1961, 19-28)

TEXT: If a program device, intended for setting some curve, uses differential analyzers (i.e. if the basic elements of the program equipment are integrators and summing devices), then this curve is invariant with respect to the argument φ of the integrators. A variation of φ will only change the velocity of reproduction of the curve but not of the form of the curve itself. This property of the program device can be used for ensuring determined characteristics of program-control systems with feedback (for example, for ensuring constancy of the velocity of displacement of the physical object that reproduces the set curve). The velocity must be constant

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irrespectively of the form of the curve on each section. In this case, in order to correct the value of the argument one can use the errors in working off the curves by the servo-mechanisms along each coordinate. Correction with respect to the argument enables one also to reduce errors in the presence of noise. In addition to argument correction, differential analyzers enable one to design systems with self-adjustment, when the curve to be reproduced must vary depending on properties of the object. In this case undetermined coefficients depending on properties of the object are introduced in the program unit. The example is considered of the use of program equipment reproducing a second-order curve for a milling machine. 3 figures, 4 references. [Abstracter's note: Complete translation.]

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S/573/61/000/005/003/023
D201/D305

AUTHOR: Ignat'yev, M.B.

TITLE: On the problem of programming surface machining

SOURCE: Akademiya nauk SSSR. Institut elektromekhaniki.
Sbornik rabot po voprosam elektromekhaniki. no. 5,
1961, Moscow. Avtomatizatsiya, telemekhanizatsiya
i priborostroyeniye, 29 - 38

TEXT: In the present article the author considers the question of whether further reduction of the amount of information would be possible, utilizing the fact that the trajectories used in machining would have to reproduce a surface their density being not smaller than required. This density is determined by a given number of constants u_s in the set of differential equations representing the given surface. It is shown that the arrangement for producing u_s may work with little information about the trajectories. In general u_s may be constant or represented by more or less complicated analytical functions and as such are used as coefficients proportional to the surface coordinates. Card 1/4



On the problem of programming ...

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tional to the directional cosines of the surface of the given curve. A method is suggested in which the curves are given not as formulae. This would apply for the case in which the required trajectories are given as projections on one or the other of the coordinate plane, the values of coordinates being introduced as functions of time. In the proposed method it is necessary to know only the first movement of the instrument, the first grove to be produced. All subsequent movement may be determined from the first one, provided all curves are the Bertrand curves. The bloc diagram of such programming is shown in Fig. 3. The arrangement operates as follows: The coordinates x_3 and y_3 of the first grove are registered on the magnetic drum I; they are read by heads a_1 ; the switch K_2 is closed and K_3 open. The information about given x_3 and y_3 is compared with the values of coordinates x and y as worked out by 4 and $(x_3 - x)$ and $(y_3 - y)$ are applied to the bloc 4. Simultaneously with this, bloc 5 calculates the coordinates of the second grove, registered by heads b_2 at drum II (switch K_4 open and K_1 closed). The whole operates in this manner until the first grove is reproduced. As
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On the problem of programming ...

soon as it is finished, the carriage moves down, the head a_2 is put against the beginning of the registration of the second groove, switches K_1 and K_3 close, K_2 and K_4 open. The carriage then moves upwards, heads a_2 read the coordinates of the second groove, heads b_1 register at drum I the coordinates of the third groove and so on. A second variant is possible, when the arrangement functions on the basis of information of the past, the only difference with the previous method being that three, instead of two, coordinates have to be registered. Such an arrangement is analogous to that of Loginov as used for automatic tractor control. The methods of trajectory programming as considered above makes it possible to decrease considerably the volume of information about factors u_s being introduced into the programmer making the latter slightly more complex. This complexity may be made negligible, however, provided blocks producing u_s made less accurate than the one which determines the programming of trajectories at the given surface. The system has its own peculiarities and as opposed to the system of position and contour programmed control may be called the system of programmed

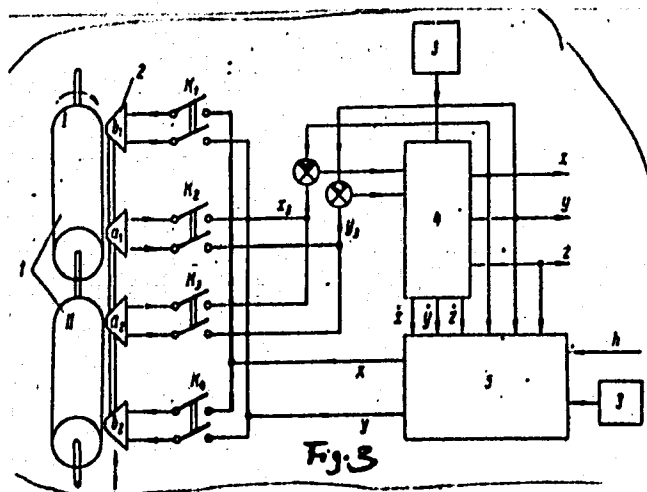
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surface control. There are 5 figures and 3 Soviet-bloc references.

Fig. 3.



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BARANOVA, V.S. (Leningrad); IGNAT'YEV, M.B. (Leningrad)

Synthesis of differential analyzers for the reproduction
of trajectories on multidimensional surfaces. Izv. AN SSSR.
Otd. tekhn. nauk. Energ. i avtom. no.5:144-150 S-0 '62.

(MIRA 15:11)

(Electronic differential analyzers)
(Automatic control)

VORONOV, A.A.; IGNAT'YEV, M.B.

Some uses of digital analogs in automatic control. Sbor.rab.po
vop.elektromekh. no. 5-19-81. (MIRA 1641)
(Automatic control) (Electronic differential analyzers)

IGNAT'YEV, M.B.

Some problems concerning the synthesis of digital analogs.
Sbor.rab.po vop.elektromekh. no.7:19-33 '62. (MIRA 16:1)
(Automatic control)

IGNAT'YEV, M.B.

Construction of program control systems for machine tools. Sbor.
rab. po vop. elektromekh. no. 7:228-242 '62. (MIRA 16:1)
(Automatic control) (Machine tools—Numerical control)

IGNAT'YEV, Mikhail Borisovich; VORONOV, A.A., prof., otv. red.;
SMIRNOVA, M.I., red.izd-va; ZAMARAYEVA, R.A., tekhn.red.

[Holonomic automatic systems] Golonomnye avtomaticheskie
sistemy. Moskva, Izd-vo AN SSSR, 1963. 203 p.

(MIRA 16:9)

(Automatic control)

VORONOV, A. A.; IGNATYEV, M. B.

"On Finding Function Extremums in Automatic System."

Paper to be presented at the IFAC Congress, to be held in
Basel, Switzerland, 27 Aug to 4 Sep 63

IGNAT'YEV, M.B.; LEPPIK, K.V.

Study of a holonomic automatic system with argument correlation.
Sbor. rab. po vop. elektromekh. no.9:22-28 '63. (MIRA 17:2)

8/2573/63/000/009/0038/0045

ACCESSION NR: AT4015856

AUTHOR: Ignat'yev, M. B.; Mikhaylov, V. V.

TITLE: A method for checking and correcting computer performance in reproducing a prescribed function

SOURCE: AN SSSR. Institut elektromekhaniki. Sbornik rabot po voprosam elektromekhaniki, no. 9, 1963. Avtomatizatsiya, telemekhanizatsiya i priborostroyeniye (Automation, telemechanization and instrument manufacture), 38-45

TOPIC TAGS: computer, computer performance, function reproduction, error correction, analog computer, redundancy

ABSTRACT: Existing methods which improve the reliability of computer operations either cannot be adapted to control the correctness of computer performance or suffer from stability problems. This new method can be used to check and correct the performance of analog, discrete or hybrid computers designed to reproduce a given mathematical function for various values of parameters. It regards the given function of a cross section of multi-dimensional surfaces and programs the computer to solve for all these surfaces simultaneously. The correctness of the solution of the simplest surfaces gives an indication of the correctness of the solution of the entire problem. If the control function is a simple

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ACCESSION NR: AT4015856

sum of variables, it is always possible to detect the drift of the function mapping point beyond the boundaries of one control plane. A further improvement is possible by constructing another control plane which is orthogonal to the first one. A further increase in redundancy may be achieved if each of the variables is represented as some function of two or more new variables and simple control functions are constructed which consist of these new variables. The results of the checking operation can be used to correct the error. The errors which occur when the control functions are not satisfied can be regarded as new variables. When the equivalent system of differential equations is constructed for this extended system, the set of coefficients can be selected so that the errors in the control functions tend to be minimized. The errors in separate variables of the reproduced function can be corrected by assuming that the errors in all variables are equally likely to occur and that the probability of simultaneous errors in two variables is small. From a proper combination of disturbed control functions, the error in the variable of the reproduced function may be detected. The method can also determine the block of the computer in which the error has occurred. The control equations may be full differentials of the sum of control variables. Using a sufficient number of additional variables and choosing different combinations of control functions for each computer block, a variable degree of correction can be achieved for blocks with different probabilities of occurrence of error. The equation of the reproduced function itself can be used as a control equation. In this case the control function is nonlinear but cumulative error is absent and no errors remain undetected.

Card 2/3

ACCESSION NR: AT4015856

Orig. art. has: 13 formulas, 1 table and 2 figures.

ASSOCIATION: Institut elektromekhaniki AN SSSR (Institute of Electromechanics AN SSSR)

SUBMITTED: 00

DATE ACQ: 20Dec63

ENCL: 00

SUB CODE: DP

NO REF SOV: 002

OTHER: 001

Card 3/3

IGNAY'YEV, M.B.

Construction of devices for the reproduction of equidistant curves.
Sbor. rab. po vop. elektromekh. no.9:60-66 '63. (MIRA 17:2)

AN4016099

BOOK EXPLOITATION

S/

Ignat'yev, Mikhail Borisovich

Holonomic automatic systems (Golonomny*ye avtomaticheskiye sistemy*)
Moscow, Izd-vo AN SSSR, 63. 0203 p. illus., biblio. 4,000 copies
printed. (At head of title: Akademiya nauk SSSR. Institut
elektromekhaniki)

TOPIC TAGS: automatic control system, holonomic automatic control
system, optimizing system, self adaptive system, self teaching
system, differential equation

PURPOSE AND COVERAGE: The monograph considers automatic systems
with a behavior specified accurate to the intersection of manifolds,
and in particular to a line and surface. The structure of the dif-
ferential equations that describe such systems is determined. Sys-
tems with correction of the rate at which curves are reproduced,
with correction of trajectory, and also with automatic search for
the extrema of functions of many variables are considered. Program-
med control systems for machine tools used to cut contours and sur-
faces are synthesized. The systems covered include many metal-

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working tools, manipulators, and some chemical processes, and also have analogs in biology. Various modifications of holonomic automatic systems, which differ from each other primarily in the degree of independence of behavior, are dealt with. The book is intended for scientific workers, engineers, and senior students in institutions specializing in automatic control, and is also of interest to mathematicians (it contains several problems related to unsolved mathematical problems) and biologists interested in a mathematical model of system development. The author thanks Doctor of Technical Sciences Professor A. A. Voronov, who supported publication of the book, Doctor of Technical Sciences Professor A. V. Fateyev, who paid much attention to the work, Candidates of Technical Sciences G. N. Sokolov and V. V. Semenov, who made many useful remarks, and V. S. Sokhranskaya of LOMI imeni V. A. Steklova and all the members of the laboratory for program control and theory of automatic control of Institut elektromekhaniki (Institute of Electromechanics), who helped the author.

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Ch. III. Construction of programmed control systems for machine tools - - 99
Ch. IV. Finding extrema of functions - - 170
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SUB CODE: MM, CP, CG

SUBMITTED: 28Jun63

NO REF SOV: 107

OTHER: 024

DATE ACQ: 10Dec63

Card 3/3

L 27238-65 EMT(1)/EWA(h) Feb 68

ACCESSION NR: AT5003912

S/0000/64/000/000/0160/0171

AUTHOR: Ignat'yev, M. B.; Mikhaylov, V. V.

TITLE: Concerning one method of checking and correcting differential analyzers that generate specified functions

SOURCE: Vsesoyuznaya konferentsiya - seminar po teorii i metodam matematicheskogo modelirovaniya. 3d, 1962. Vychislitel'naya tekhnika v upravlenii (Computer technology in control engineering); sbornik trudov konferentsii. Moscow, Izd-vo Nauka, 1964, 160-171.

TOPIC TAGS: differential analyzer, function generator, error correction, error detection

ABSTRACT: A method is proposed for checking both parallel and sequential computers. It is based on the assumption that the specified function is the projection of the intersection of multidimensional surfaces, with the correction of the construction of the simplest of these surfaces giving an indication of the correction of the solution of the problem as a whole. The method is illustrated with the generalization of the equation for a circle by means of an integrating computer. In this

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ACCESSION NR: AT5003912

problem the correctness of the generation of the function $x^2 + y^2 = R^2$ can be checked by testing the vanishing of the simpler function $x + y - z = 0$. Procedures for the correction of various errors are demonstrated and methods of minimizing the errors are indicated. Block diagrams are shown for ultrastable systems and for circle-generation systems based on these principles. Methods of extending the procedure for functions specified in differential form are also discussed. Orig. art. has: 5 figures and 32 formulas.

ASSOCIATION: None

SUBMITTED: 17Aug64

ENCL: 00

SUB CODE: DP

NR REF SOV: 009

OTHER: 001

Card 2/2

L 27245-65 EWT(1)/EWA(h) Feb 68

ACCESSION NR: AT5003900

S/0000/64/000/000/0007/0014

AUTHORS: Voronov, A. A.; Ignat'yev, M. B.

TITLE: Use of differential analyzers in automatic control

SOURCE: Vsesoyuznaya konferentsiya-seminar po teorii i metodam matematicheskogo modelirovaniya. 3d, 1962. Vychislitel'naya tekhnika v upravlenii (Computer technology in control engineering); sbornik trudov konferentsii. Moscow, Izd-vo Nauka, 1964, 7-14

TOPIC TAGS: digital differential analyzer, automatic control, automatic machining

ABSTRACT: Comparison of the published data dealing with the use of special-purpose digital differential analyzers for automatic control indicates that in all cases the equipment must incorporate a computing unit that generates a specified function with a prescribed degree of accuracy. Such a unit can be synthesized on the basis of a dif-

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ACCESSION NR: AT5003900

ferential equation, by regarding the computing section as an analog device and then reducing the error due to its discrete action by means of supplementary means. To this end, the authors analyze mathematically the generation of functions of many variables and the determination of their extrema, and then indicate the application of the results to the synthesis of the structure of the concrete differential equation of a programming unit used to control three-dimensional surface machines. Orig. art. has: 11 formulas.

ASSOCIATION: None

SUBMITTED: 17Aug64

ENCL: 00

SUB CODE: DP, IE

NR REF SOV: 019

OTHER: 000

2/2

ACCESSION NR: AT5013563
 AUTHOR: Ignat'yev, M.B.⁴⁴; Mikhaylov, V.V.⁴⁴
 TITLE: The establishment of programming devices with controls and corrections
 SOURCE: AN SSSR. Institut elektromekhaniki, no. 9, 1963, priborostroyeniye (Automatic control, remote control, and instrument manufacture). Moscow, Izd-vo Nauka, 1964, 161-172
 TOPIC TAGS: error correction, computer calculation, computer component
 ABSTRACT: The authors previously proposed (Voprosy elektromekhaniki, no. 9, 1963, AN SSSR; Vychislitel'naya tekhnika v avtomaticheskoy upravlenii, AN SSSR, 1963) the incorporation of redundancies into the problems under consideration which would permit the control and correction of computer solutions if they contain errors caused by the incorrectness of the calculational algorithms, and by random machine component failures. In contradistinction to the known approaches the proposed approach allows the control and correction of the solution as a whole and may be used in machines with series or parallel action of the discrete, analog, or combined types. The present paper investigates in detail the establishment of devices with controls and corrections

L 00368-66

ACCESSION NR: AT5013563

intended for the reproduction of functions specified by finite equations. Orig. art. has: 40 formulas, 2 figures, and 1 table.

ASSOCIATION: none

SUBMITTED: 24Oct64

ENCL: 00

SUB CODE: DP, MA

NO REF SOV: 005

OTHER: 001

L 42219-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(1) GD/BC

ACC NR: AT6008923

SOURCE CODE: UR/0000/65/000/000/0062/0073

AUTHOR: Ignat'yev, M. B.

ORG: none

61
B+1

TITLE: Synthesizing servo functional structures with checking and correction

SOURCE: AN SSSR. Institut elektromekhaniki. Avtomaticheskkiye i teleanformatsionnyye sistemy (Automatic and teleinformation systems). Moscow, Izd-vo Nauka, 1965, 62-73

TOPIC TAGS: control computer, function generator, automatic control, automatic control system, automatic control theory

ABSTRACT: Synthesizing control-type computers¹⁴ and servo function generators describable by these differential equations is considered:

$\frac{dy_i}{dt} = f_i(y_1, \dots, y_n, x_1, \dots, x_k), \quad i=1, 2, \dots, n;$ here, x_1, \dots, x_k are functions of time introduced into the apparatus in question. In a control computer, x is a feedback

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ACC NR: AT6008923

signal or command signal; in a function generator, ξ is a variable being converted. The checking and correction are achieved by introduction of a redundancy and imposition of checking conditions. These examples of synthesizing are considered in some detail: an integrator, a function generator calculating z as a function of two variables, and a control computer with a redundant ξ vector. The efficiency of the systems synthesized along the above lines is evaluated, as is the optimality of the no-feedback systems with orthogonal expansion. Orig. art. has: 3 figures and 47 formulas.

SUB CODE: 13, 09 / SUBM DATE: 14Jul65 / ORIG REF: 005

Card 2/2 af

L 42218-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l) JT/GD/BC

ACC NR: AT6008924

SOURCE CODE: UR/0000/65/000/000/0074/0085

AUTHOR: Ignat'yev, M. B.; Mikhaylov, V. V.; Perovskaya, Ye. I.

ORG: none

TITLE: Synthesizing a checking and correcting programmer for machining surfaces

SOURCE: AN SSSR. Institut elektromekhaniki. Avtomaticheskiye i teleanformatsionnyye sistemy (Automatic and teleinformation systems). Moscow, Izd-vo Nauka, 1965, 74-85

TOPIC TAGS: automatic programing, nonlinear programing, metal cutting

ABSTRACT: General considerations are presented re a programing system with continuous linear checking and correction which is intended for controlling automatic metal-cutting machines. The surface being machined is regarded as a controlled function. A system of integral equations is set up, and a block diagram of a programmer capable of solving it is shown. The synthesis of a system

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ACC NR: AT6008924

with two checking planes is briefly considered. Operation of the above programmer was simulated on a digital computer with 10-digit integrator registers. Without correction, the programmer accumulated (over 25 cutter travels) an error of 15 units; with the linear checking and correction, the error was 2.5 units. Orig. art. has: 2 figures and 18 formulas.

SUB CODE: 13, 09 / SUBM DATE: 14Jul65 / ORIG REF: 006 / OTH REF: 008

Card 2/2 af

Doc. No. 0010320 (N) SOURCE CODE: UZ/0410/05/000/005/0003/0011

AUTHOR: Britov, G. S. (Leningrad); Ignat'yev, M. B. (Leningrad)

ORG: none

TITLE: Redundancy in complex information sensing and processing systems

SOURCE: Avtometriya, no. 5, 1965, 3-11

TOPIC TAGS: information processing, system reliability, reliability engineering

ABSTRACT: A method is proposed for introducing redundant linear control tests into a data sensing and processing system such that they are contained directly in the algorithm of the system. The purpose is to improve the reliability and accuracy of individual units as well as of the entire system. Special consideration is given to the case when the information supplied by the sensors is incorrect and cannot be corrected by the information processing unit alone, no matter how accurate or free from interference. The sensors in question are frequently complex devices containing series-parallel elements which usually transform the measured physical parameter of an object into an electric signal. It is assumed that regardless of the complexity of the sensor, its operational algorithm can be represented in the form $y = k_{\text{sensor}} x$. The redundancy of such input sensors is considered from the standpoint of redundant vari-

UDC: 681.20

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L 08870-67

ACC NR: AP6016320

ables. Transfer coefficients are derived for sensors which satisfy linear control conditions as well as an expression for the error due to any deviation of the sensor from the linear law. It is shown that appropriate feedback can be used to compensate for errors. Block diagrams of proposed systems based on this method are presented and discussed. The control over the operation of the sensors makes it possible to diagnose a defective sensor when the number of sensors is $n \geq 3$. Circuit logic and operating algorithm are discussed. Orig. art. has: 27 formulas, 4 figures.

SUB CODE: 09/14/

SUBM DATE: 09Mar65/

ORIG REF: 003

Card 2/2 00k